

CLAIMS

What is claimed is:

1. (Currently amended) A nucleic acid sequence which comprises:

$P_x-S_x-B_n-(ZR)-\text{transport peptide}-(Z_1Z_2)-\text{protein}(Y)-T$; wherein:

the nucleic acid codes for a fusion protein comprising a peptide encoded by transport peptide linked via a peptide encoded by a first Z_1Z_2 to a protein encoded by said protein(Y) which is linked to T;

the peptide encoded by transport peptide improves the rate of secretion of the protein encoded by said protein(Y);

P_x comprises a promoter sequence;

S_x comprises a nucleic acid sequence encoding a signal or leader sequence;

B_n is a chemical bond;

Z is a codon for lysine or arginine;

R is an arginine codon;

transport peptide comprises a nucleic acid sequence encoding hirudin or an ~~hirudin~~ variant lepirudin;

Z_1 is a codon for lysine or arginine ~~or a portion thereof or a chemical bond when Z_1 and Z_2 combine to make the second Z_1Z_2 and $m=0$;~~

Z_2 is a codon for lysine or arginine ~~or a portion thereof or a chemical bond when Z_1 and Z_2 combine to make the second Z_1Z_2 and $m=0$;~~

protein(Y)-comprises a nucleic acid sequence encoding a protein, selected from the group consisting of mini-proinsulin and proinsulin, that is produced and secreted by yeast; and

T is a terminator ~~an untranslated expression enhancing nucleic acid sequence~~.

2-5. (Canceled)

6. (Original) A multicopy vector comprising the nucleic acid of claim 1.

7. (Original) A plasmid comprising the nucleic acid of claim 1.

8. (Original) A host cell comprising the nucleic acid of claim 1 as a part of the host cell chromosome, as a part of a mini-chromosome, or extra-chromosomally.

9. (Original) The host cell of claim 8, wherein the host cell is a yeast.

10. (Currently amended) The host cell of claim 9, wherein the yeast is selected from *Saccharomyces cerevisiae*, *Kluyveromyces fragilis*, *Hansenula polymorpha*, and *Pichia pastoris*.

11. (Original) A host cell comprising the multicopy vector of claim 6.

12. (Original) A host cell comprising the plasmid of claim 7.

13-37. (Canceled)

38. (New) The nucleic acid sequence according to claim 1 wherein the hirudin is selected from the group consisting of Val-Val-hirudin and Ile-Thr-hirudin.